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Patented Nov. 25, 1902.

H. A. STREETER.
METALLIC WINDOW FRAME AND SASH.

(Application filed May 19, 1902.)

(No. Model.)

2 Sheets—Sheet 1.

Fig. 1.

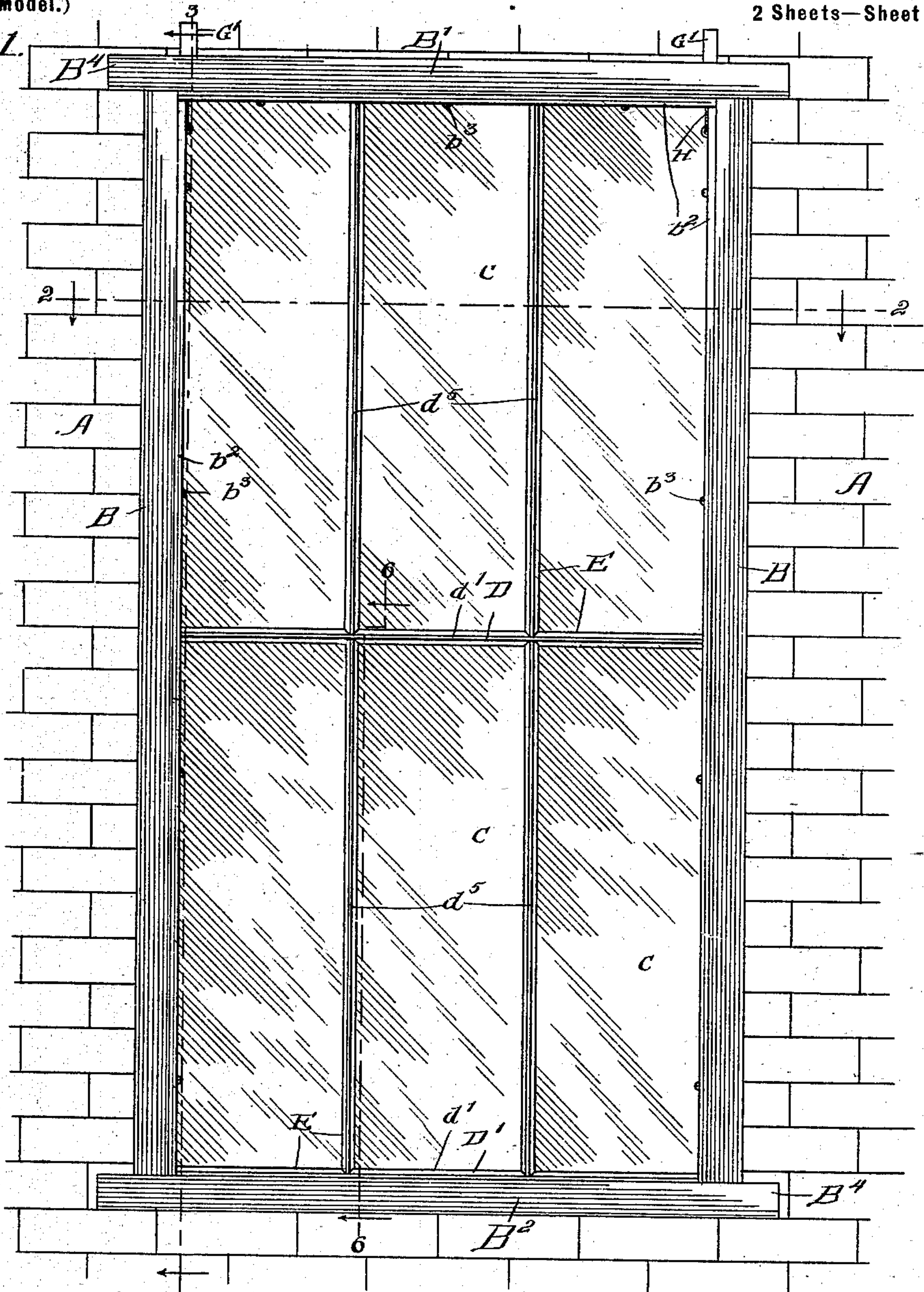
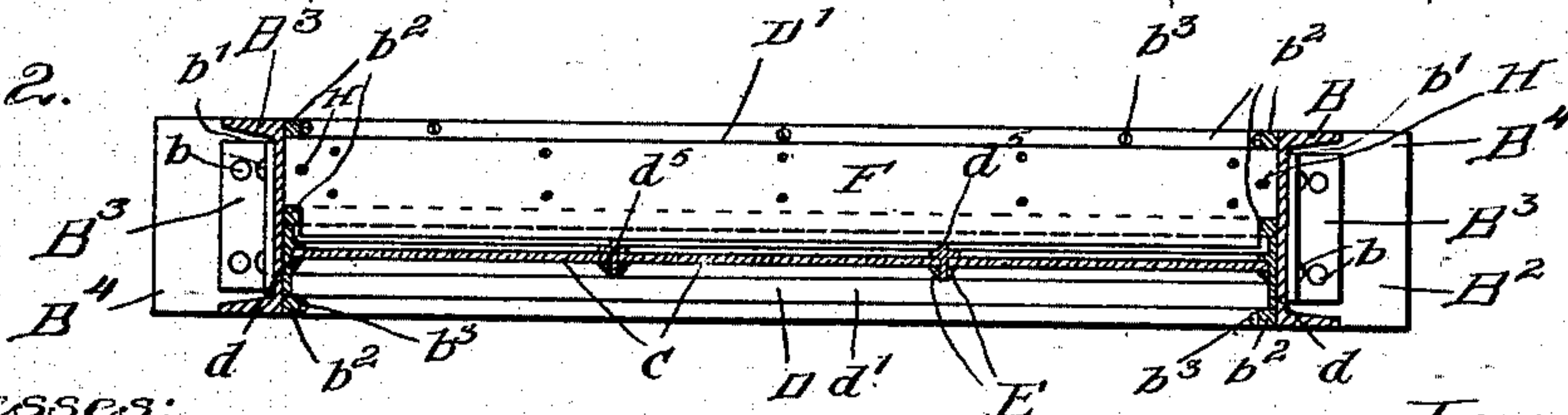


Fig. 2.



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METALLIC WINDOW FRAME AND SASH.

SPECIFICATION forming part of Letters Patent No. 714,254, dated November 25, 1902.

Application filed May 19, 1902. Serial No. 107,939. (No model.)

To all whom it may concern:

Be it known that I, HERBERT A. STREETER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Metallic Window Frames and Sash, of which the following is a specification.

My invention relates to improvements in metallic windows, and more particularly to the construction of the window frame and sash.

The object of my invention is to provide a fireproof window frame and sash of a simple, efficient, strong, durable, and economical construction.

My invention consists in the novel construction of parts and devices and the novel combination of parts and devices herein shown or described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of a window embodying my invention. Fig. 2 is a horizontal cross-section on line 2 2 of Fig. 1. Fig. 3 is a vertical section on line 3 3 of Fig. 1. Fig. 4 is an enlarged section similar to Fig. 3, but showing the window open, the lower sash being raised and the upper one lowered. Fig. 5 is a detail vertical section on line 5 5 of Fig. 3. Fig. 6 is a detail vertical section through one of the sash on line 6 6 of Fig. 1. Fig. 7 is a detail section on line 7 7 of Fig. 6. Fig. 8 is a detail top view showing one corner of one of the sash. Fig. 9 is a section on line 9 9 of Fig. 8. Fig. 10 is a sectional view showing a modified construction of the window-frame.

In the drawings like letters of reference indicate like parts in all the figures.

In said drawings, A represents the wall of the building.

B B are upright steel channel-bars forming the sides of the metallic window-frame, and B' B² are upper and lower channel-bars forming the top and bottom of the window-frame and against which the ends of the side frame-bars B B abut and to which the same are firmly secured by angle-plates B³, fitting in the angles formed by the projecting ends B⁴ of the horizontal frame-bars B' B². Rivets b are inserted through the angle-plates and the frame-bars, as will be readily understood from Fig. 5. The projecting ends B⁴ also

serve to securely anchor the window-frame to the building or in the wall thereof. The groove or channel b' of the channel-bars also affords anchorage between the window-frame and the wall of the building, and being filled in with mortar forms a perfectly tight joint between the window-frame and the wall of the building, free from cracks and crevices, as the metallic window-frame will not shrink or warp.

The side frame-bars B B are furnished on their inner faces with guide rails or ribs b², the same being removably secured to the frame-bars by screws b³, although one of the marginal guide-rails b² may, if desired, be formed integral with the side bars, as the sash-frames can be inserted if only two of the guide-rails are removable. The upper horizontal frame-bar B' is also furnished on its inner face with similar or corresponding guide-rails b², all of which may, if desired, be formed integral with the upper channel-bar B'. The lower horizontal window-frame bar B² is furnished with a single guide rib or rail b² on its inner edge, as the other guide-rails are not required on this lower frame-bar B² and their presence would form channels in the upper surface of the lower bar for collection of water and dust.

The upper and lower window-sash D D' have each vertical rolled-steel side bars d d and horizontal bars d' d', the side and horizontal bars being each furnished with integral flanges d² on their inner faces for the panes of glass C to fit against. The side and horizontal bars d d' are firmly and rigidly secured together at the corners thereof by projecting tongues d³ on the ends of the side bars which extend through suitable openings d⁴ in the horizontal bar d' and which are upset or riveted, as will be readily understood from Figs. 8 and 9. Each of the sash D D' is also furnished with one or more division-rails d⁵, having flanges d⁶ d⁶ to receive and support the glass and provided with tongues d⁷ at their ends which project through suitable openings d⁸ in the sash-frame bars d' and which are upset or riveted to secure the division-rails in place.

E represents the putty for securing the glass panes C in place on the sash-frames. The upper frame-bar d' of the lower sash D'

is furnished with a stop-plate F on its upper face the outer edge of which overlaps the projecting web d^9 of the lower bar d' of the upper sash D when the windows are closed, as illustrated in Fig. 3, thus preventing any crevice or opening between the horizontal frame-bars of the two sash when the window is closed. This stop-plate F also underlaps and engages the corresponding projecting web d^{10} of the upper horizontal bar d' of the upper sash when the windows are open, as illustrated in Fig. 4, and thus preventing the sash from passing each other.

G G are sash-pulleys inclosed in suitable metallic boxes or cases G', resting upon the upper window-frame bar B and in or upon which the shaft g of the pulley is journaled. H is a sash-line, preferably a cord or chain, passing over the sash-pulley and having its ends secured to the sash D D' through the connecting eyes h , which are attached to the upright bars d of the sash-frame by screws h' . The pulley G is mounted centrally above the sash and equals in diameter the distance between the points of connection of the two ends of the sash-line with the sash D D'. The sash-line H extends through suitable holes or openings d^{11} d^{11} in the upper horizontal frame-pieces of the sash, these openings or points of connections of the sash-line with the sash being each located in the vertical plane of the center of gravity of each sash, so that the sash may slide freely up and down in the sash-guideways b^4 formed on the sash by the guide rails or ribs b^2 .

Each of the sash-pulleys G is located directly above the upper ends of the side bars B B of the window-frame, so that the sash-lines H H fit centrally in the sashways b^4 , formed by the guide rails or ribs b^2 b^2 . The sash-pulleys are mounted transversely of the plane of the sash—that is to say, their axes or shafts extend parallel to the planes of the sash. In this way one sash balances the other, and sash-weights as well as boxes or ways for the sash-weights are dispensed with, and the necessity for duplicating the sash-pulleys is also avoided.

In the modification illustrated in Fig. 10 the sash-frame instead of being composed of channel-bars is made of a pair of angle-bars P P, riveted to a connecting flat bar P', which together form, in effect, a channel-bar.

I claim—

1. The combination in a window of a pair of upright window-frame channel-bars B B, horizontal window-frame channel-bars B' B² having ends B⁴ projecting beyond said upright bars and secured thereto by angle-plates B³, said upright channel-bars being furnished on their inner faces with guide ribs or rails b^2 forming ways b^4 for the sash, a pair of metal sash D D' each having upright metal side bars d d and horizontal bars d' d' furnished on their inner faces with integral flanges d^2 for the panes of glass to fit against and secured together at their corners by interfitting

tongues d^3 and openings d^4 , the lower sash being provided with a stop-plate F on its upper horizontal frame-bar d' , sash-pulleys G G mounted transversely and centrally on the upper horizontal window-frame channel-bar B² and sash-lines H passing over said pulleys and having their ends secured to the sash D D', each strand of the sash-lines fitting centrally in the sashways formed by the guide ribs or rails on the upright window-frame channel-bars B B, substantially as specified.

2. In a metal window, the combination with upright window-frame channel-bars B B provided with guide rails or ribs b^2 forming ways b^4 for the sash, and horizontal window-frame channel-bars B' B², of a pair of metal sash D D', a pair of pulleys G G mounted transversely on the upper frame-bar B² and centrally over said ways b^4 and lines H passing over said pulleys and having each one end attached to each sash, substantially as specified.

3. In a metal or fireproof window, the combination of upright frame channel-bars B B furnished on their inner faces with guide-rails b^2 forming ways b^4 for the sash, and upper and lower horizontal channel-bars B' B² having projecting ends B⁴ and angle-plates B³, substantially as specified.

4. The combination of the window-frame, of a pair of metal sash D D' each having upright metal sash-bars d d , and horizontal bars d' d' furnished on their inner faces with integral flanges d^2 for the panes of glass to fit against and secured together at their corners by interfitting tongues d^3 and openings d^4 , substantially as specified.

5. The combination with the window-frame, of a pair of metal sash D D' each having upright metal sash-bars d d , and horizontal bars d' d' furnished on their inner faces with integral flanges d^2 for the panes of glass to fit against and secured together at their corners by interfitting tongues d^3 and openings d^4 , the lower sash being provided with the stop-plate F on its upper horizontal frame-bars d' , substantially as specified.

6. The combination with the window-frame, of a pair of metal sash D D' each having upright metal sash-bars d d , and horizontal bars d' d' furnished on their inner faces with integral flanges for the panes of glass to fit against and secured together at their corners by interfitting tongues d^3 and openings d^4 , the lower sash being provided with the stop-plate F on its upper horizontal frame-bars d' , and sash-pulleys G G mounted transversely to the window-frame and centrally over the sashways in the upright bars of the frame, and sash-lines passing over said pulleys and each having one end attached to each sash, substantially as specified.

7. The combination with the window-frame, of a pair of metal sash D D' each having upright metal bars d d , and horizontal bars d' d' furnished on their inner faces with integral flanges for the panes of glass to fit against and

secured together at their corners by interfit-
ting tongues d^3 and openings d^4 , the lower
sash being provided with the stop-plate F on
its upper horizontal frame-bars d' , sash-pul-
5 leys G G mounted transversely to the window-
frame and centrally over the sashways in the
upright bars of the frame, sash-lines passing
over said pulleys and each having one end at-
tached to each sash, and connecting eye-
10 pieces h attached to the upright bars d of the
sash-frame, the upper horizontal bar d' of the
sash-frame having openings d^{11} through the
same for the sash-line, substantially as speci-
fied.

15 8. The combination with the window-frame,

of a pair of metal sash D D' each having up-
right metal sash-bars d d' , and horizontal bars
 d' d' furnished on their inner faces with in-
tegral flanges d^2 for the panes of glass to fit
against and secured together at their corners 20
by interfitting tongues d^3 and openings d^4 ,
and division-rails d^5 having flanges d^6 d^6 and
provided with tongues d^7 at their ends enter-
ing openings d^8 in the sash-frame, substan-
tially as specified.

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Witnesses:

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